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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,709	09/29/2003	Paul F. Stetson	009103-017410	4596

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EXAMINER

KREMER, MATTHEW J

ART UNIT	PAPER NUMBER
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3736

DATE MAILED: 10/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/674,709

**Applicant(s)**

STETSON, PAUL F.

**Examiner**

Matthew J Kremer

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 July 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 41-61 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 41-61 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Double Patenting*

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claims 41 and 50 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 11 and 30 of prior U.S. Patent No. 6,701,170 to Stetson.

This is a double patenting rejection. Claim 41 of the present application is identical to claim 11 of Stetson. Claim 50 of the present application is identical to claim 30 of Stetson.

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 41-61 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7, 13-14, 20-25, and 32-36 of U.S. Patent No. 6,701,170 to Stetson in view of U.S. Patent No. 5,909,646 to Deville. In regard to claim 41 of the present application, claim 1 of Stetson claims a "method for measuring a physiological parameter, comprising: measuring a plurality of signals, wherein each of said signals comprises a source component corresponding to said physiological parameter and an interference component; processing said plurality of signals to obtain a plurality of principal components; processing said plurality of principal components to obtain a plurality of independent components, wherein a matrix of said plurality of signals corresponds to a matrix product of a matrix of said plurality of independent components and a matrix of mixing coefficients; and extracting a first measure of said physiological parameter corresponding to said source component from one of said plurality of independent components, wherein said plurality of signals corresponds to sensed optical energies from a plurality of wavelengths". Claim 1 of Stetson does not claim the step of maximizing a function of third-order cumulants of a mixture of the plurality of signal but does claim processing a matrix of mixing coefficients. Deville teaches that third-order cumulants are used to determine the mixing coefficients. (column 2, lines 24-29 and column 4, lines 37-40 of Deville). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the third-order cumulants in the claimed invention of

Stetson since claim 1 of Stetson claims the use of a matrix of mixing coefficients and Deville teaches that third-order cumulants are used to determine the mixing coefficients. In regard to claim 42 of the present application, claim 2 of Stetson claims "said physiological parameter is a function of an oxygen saturation". In regard to claim 43, claim 3 of Stetson claims "wherein said processing said plurality of signals further comprises obtaining a time derivative of the sensed optical energies from a plurality of wavelengths". In regard to claim 44 of the present application, claim 4 of Stetson claims "wherein said interference component comprises signal components caused by motion, respiratory artifact, ambient light, optical scattering and other interference between a tissue location being sensed and a sensor". In regard to claim 45 of the present application, claim 5 of Stetson claims "wherein said processing said plurality of signals further comprises decorrelating said plurality of signals by minimizing a cross-correlation of said plurality of signals, to obtain a plurality of decorrelated signals; and normalizing said plurality of decorrelated signals to obtain the plurality of principal components". In regard to claim 46 of the present application, claim 6 of Stetson claims "wherein said processing said plurality of signals comprises decorrelating said plurality of signals by singular-value decomposition of said plurality of signals, to obtain the plurality of principal components". In regard claim 47 of the present application, claim 7 of Stetson claims "wherein said processing said plurality of signals comprises decorrelating said plurality of signals by multiplying said plurality of signals the inverse square root of the covariance matrix of said plurality of signals to obtain the plurality of principal components". In regard to claim 48 of the present application, claim 13 of Stetson

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claims "obtaining a ratio of mixing coefficients from said matrix of mixing coefficients, wherein said ratio corresponds to a ratio of modulation ratios of red to infrared signals, wherein said plurality of signals comprise modulated optical signals in the red and infrared ranges". In regard to claim 49 of the present application, claim 14 of Stetson claims "extracting a second measure of said physiological parameter from said ratio, wherein said second measure of said physiological parameter corresponds to an oxygen saturation". In regard to claim 50 of the present application, claim 20 of Stetson claims a "pulse oximeter, comprising: a sensor configured for measuring a plurality of signals, wherein each of said signals comprises a source component corresponding to said physiological parameter and an interference component; a computer useable medium having computer readable code embodied therein for measuring a physiological parameter, said computer readable code configured to execute functions comprising: processing said plurality of signals to obtain a plurality of principal components; processing said plurality of principle components to obtain a plurality of independent components, wherein a matrix of said plurality of signals corresponds to a matrix product of a matrix of said plurality of independent components and a matrix of mixing coefficients; and extracting a first measure of said physiological parameter corresponding to said source component from one of said plurality of independent components, wherein said plurality of signals corresponds to sensed optical energies from a plurality of wavelengths". Claim 20 of Stetson does not claim the function of maximizing a function of third-order cumulants of a mixture of the plurality of signal but does claim processing a matrix of mixing coefficients. Deville teaches that third-order

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cumulants are used to determine the mixing coefficients. (column 2, lines 24-29 and column 4, lines 37-40 of Deville). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the third-order cumulants in the claimed invention of Stetson since claim 1 of Stetson claims the use of a matrix of mixing coefficients and Deville teaches that third-order cumulants are used to determine the mixing coefficients. In regard to claim 51 of the present application, claim 21 of Stetson claims "wherein said physiological parameter is an oxygen saturation". In regard to claim 52 of the present application, claim 22 of Stetson claims "wherein said plurality of signals corresponds to the time derivative of the sensed optical energies from a plurality of wavelengths". In regard to claim 53 of the present application, claim 23 of Stetson claim "wherein said interference component comprises signal components caused by motion, respiratory artifact, ambient light, optical scattering and other interference between a tissue location being sense and a sensor". In regard to claim 54 of the present application, claim 24 of Stetson claims "wherein said processing said plurality of signals comprises decorrelating said plurality of signals by minimizing a cross-correlation of said plurality of signals, to obtain a plurality of decorrelated signals; and normalizing said plurality of decorrelated signals to obtain the plurality of principal components". In regard to claim 55 of the present application, claim 25 of Stetson claims "wherein said processing said plurality of signals comprises decorrelating said plurality of signals by singular-value decomposition of said plurality of signals, to obtain the plurality of principal components". In regard to claim 56 of the present application, claim 26 of Stetson claims "wherein said processing said plurality of

signals comprises decorrelating said plurality of signals by multiplying said plurality of signals by the inverse square root of the covariance matrix of said plurality of signals to obtain the plurality of principal components". In regard to claim 57 of the present application, claim 32 of Stetson claim "wherein said processing said plurality of principal components comprises successive transformations to simultaneously minimize...higher-order correlations among the outputs of the transformations". In regarding 58 of the present application, claim 33 of Stetson claims "wherein said processing said plurality of principal components comprises successive rotations to minimize estimated mutual information among outputs of the invention". In regard to claim 59 of the present application, claim 34 of Stetson claims "obtaining a ratio of mixing coefficients from said matrix of mixing coefficients, wherein said ratio corresponds to a ratio of modulation ratios of red to infrared signals". In regard to claim 60 of the present application, claim 35 of Stetson claims "extracting a second measure of said physiological parameter from said ratio, wherein said second measure of said physiological parameter corresponds to an oxygen saturation". In regard to claim 61 of the present application, claim 36 of Stetson claim "wherein said first measure of a physiological parameter corresponds a pulse rate".

### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

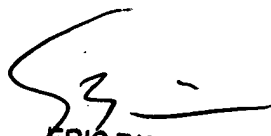
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Kremer whose telephone number is 703-605-0421. The examiner can normally be reached on Mon. through Fri. between 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on 703-308-3130. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 3736



ERIC F. WINAKUR  
PRIMARY EXAMINER